

Remarks/Arguments

Applicants thank the Examiner for careful consideration of the application.

No claims have been allowed by the Examiner.

I. Rejections under 35 U.S.C. §102/103:

Examiner, on page 2 of the Office Communication continues to assert that claims 5, 32-33, and 59 are "product by process" claims. Applicants continue to respectfully disagree with such an interpretation. Applicants continue to assert that claims 5, 32-33, and 59 are clearly apparatus claims. Applicants, in the previous response requested Examiner to specifically point out with a reasoned argument what language in the claims Examiner interprets as process limitations. Examiner in this Office Communication indicates that the process limitation is in "epitaxial." Examiner on page 5 of the Office Communication argues that, as defined by Wolf et al., epitaxial along with the terms homoepitaxy and heteroepitaxy describes depositing a thin layer of single crystal material on a surface of a single crystal substrate. Applicants believe that Examiner appears to simplify or equate epitaxial with any single crystal structure no matter what the crystallographic relationship of the structure is to the substrate. Then, Examiner, in trying to force the interpretation that epitaxial may only refer to a method, draws the conclusion that the layers in the prior art that are single crystal in nature and would therefore cover this limitation.¹ Applicants assert that such a conclusion is only partially correct. Applicants note that epitaxial refers both to a process of growing a crystalline material layer but also to the structural relationship between the substrate and epitaxial layer.² Applicants assert that it is the structural relationship between the

¹ Applicants traverse Examiner's statement on page 5 of the Office Communication stating "[a]s pointed out by the Applicants, the semiconductor layers are deposited by homoepitaxy Si-Si methods and are single crystalline in nature." Applicants note that on page 17 of 25 of the previous response, Applicants noted that Lieber does disclose epitaxial growth and quoted language from Lieber in paragraph [0493], which does not use the wording "semiconductor layers are deposited." Applicants have not and do not state that Lieber discloses "a base epitaxial semiconducting layer including a dopant of a first polarity disposed over said substrate," as disclosed and claimed by Applicants in the instant specification nor that Lieber discloses "the semiconductor layers are deposited by homoepitaxy."

² See e.g. Ben G. Streetman "Solid State Electronic Devices page 18 (Prentice-Hall, Inc. Englewood Cliffs, NJ, 2nd ed. 1980, (The growing crystal layer maintains the crystal structure and orientation of the

substrate and the epitaxial layer that Examiner either misconstrues or ignores. In the previous response Applicants argued that Lieber discloses a process of growing nanowires on a nanocluster catalyst, separating the nanocluster catalyst grown nanowires from the substrate on which they were grown, and then using a suspension and fluid flow to assemble the plurality of nanowires onto a new substrate where the nanowires are aligned along the flow direction. However, Lieber does not disclose how a particular crystallographic orientation to the new substrate is obtained. Applicants point out that in Lieber the nanowires will end up being arranged in a random distribution of crystallographic orientations relative to the crystallographic orientation of the substrate if a single crystal substrate is utilized. If Examiner continues to assert that Lieber discloses "a base epitaxial semiconducting layer including a dopant of a first polarity disposed over said substrate," as disclosed and claimed in the instant specification, Applicants respectfully request that Examiner provide in the Advisory Action an explanation of how Lieber discloses a nanowire having a predetermined particular crystallographic orientation relative to the substrate on which the device is formed in order to clarify the issues to be addressed in Applicants' Appeal Brief.

In addition, Applicants in the previous response noted on page 15 of 25 that words of a limitation that can connote with equal force a structural characteristic of a product or a process characteristic of a method of making should by default be interpreted in their structural sense, unless the applicant has demonstrated otherwise. Examiner in this Office Communication has not addressed this issue. Applicants respectfully request that Examiner provide in the Advisory Action an explanation of how epitaxial does not connote with equal force both a structural characteristic as well as a process characteristic in order to clarify the issues to be addressed in Applicants' Appeal Brief. Applicants note that epitaxial is used in claim 5 as an adjective to modify layer. Applicants further note epitaxy is a noun and epitaxial is therefore a relational word providing added structure to layer. Applicants, further argue that all relational words when broadly interpreted in an unreasonable manner would require most if not all product claims to structure to be interpreted as a product by process claim under

substrate. The technique of growing an oriented single crystal layer on a substrate is called *epitaxial growth*, or *epitaxy . . .*).

Examiner's argument, since virtually all structure requires a process to make it. Applicants assert that Examiner in interpreting epitaxial to be only a process is improperly trying to shift the burden to Applicants by ignoring the structural meaning behind the term epitaxial. Applicants continue to assert that Examiner has failed to establish a rationale how claims 5, 32-33, and 59 are product-by-process claims as well as provide a rationale how the claimed products appear to be the same or similar as the prior art of record. Both of these rationales are missing both in the previous and current Office Communications.

On page 3 of the Office Communication in item number 5 Examiner continues to reject claims 5, 6, 10-13, 15-21, 32-34 and 58 under 35 U.S.C. §102(e) as being anticipated by Lieber et al. (U.S. Patent Publication No. 2003/0089899, "Lieber"), or in the alternative, under 35 U.S.C. §103(a) as obvious over Lieber. This rejection is respectfully traversed with regard to claims 5, 6, 10-13, 15-21, 32-34 and 58-59 because all of the elements of the claimed invention are not present in the cited reference.

Examiner on page 3 states Lieber et al. shows all aspects of the instant invention listing among other limitations a plurality of first doped silicon structures and a plurality of second doped silicon structures, which Examiner refers to paragraph [0013] as support for disclosure of Applicants' claimed invention. Applicants have been unable to find, in this paragraph, any mention of a plurality of structures. In particular, Applicants have found Lieber, in paragraph 13, to disclose in each embodiment discussed therein, the term a nanowire and have been unable to find even the plural term nanowires. Applicants believe that Examiner may have meant to reference some other portion of Lieber. Applicants respectfully request Examiner to particularly point out where in the paragraph such a disclosure is made, and if Examiner is referring to a different portion of Lieber to particularly point out that portion Examiner is relying on to disclose Applicants' claim elements "a base epitaxial semiconducting layer including a dopant of a first polarity disposed over said substrate; a first semiconducting layer including a dopant of a second polarity disposed over said substrate; and a first junction formed between said base epitaxial semiconducting layer and said first semiconducting layer,

said first junction having an area with at least one lateral dimension less than about 75 nanometers."

In regards to Examiner's remark on page 4 that "how the lines are formed, either epitaxial or some other means, pertains to intermediate process steps which do not affect the final device structure," Applicants note that it is precisely the structural meaning of epitaxy that does affect the final device structure which Lieber does not disclose, teach, or suggest. Applicants assert that Lieber does not disclose, teach, or suggest alignment of a particular crystallographic orientation of a nanowire to the substrate and respectfully request Examiner to particularly point out where in Liber such a disclosure is made.

In regards, to claims 1-2 and 4 Applicants continue to assert Examiner, in relying on Kitamura, should provide a full translation since without the translation neither Applicants nor Examiner can fully understand the disclosure of Kitamura and its teachings, suggestions, and motivations. Applicants respectfully request that Examiner withdraw the finality of this Office Communication and again request that Examiner provide a full translation of Kitamura so that Applicants have the chance to understand the full disclosure of Kitamura to properly assess Kitamura as a prior art reference. If Examiner continues to assert Kitamura in the rejection of claims, 1-2 and 4 and does not withdraw the finality of this Office Communication in Examiner's Advisory action, then Applicants reserve the right to petition the director under 37 C.F.R. §1.181 to have the examiner directed to obtain and supply a translation.³ Applicants note that on page 6 of the Office Communication Examiner states that a translation of Kitamura will be forthcoming at a future date. Applicants note that since a translation was not sent along with this Office Communication, Applicants believe that such a translation provided either in the Advisory action or after Applicants file their Appeal Brief will be improper and would in fact not be considered as part of the record for purposes of appeal since Applicants would not have been afforded the opportunity to respond to any reliance Examiner may make in regards to the translation of Kitamura.

³ *Ex parte Jones*, 62 USPQ2d 1206, 1208-09 (B.P.A.I. 2001) (unpublished); ("In our view, obtaining translations is the responsibility of the examiner.").

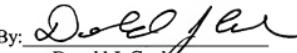
Therefore, in view of the foregoing Remarks, Applicants believe the present application to be in a condition suitable for allowance. Examiner is respectfully urged to withdraw the rejections, reconsider the present Application in light of the foregoing Remarks, and pass the amended Application to allowance.

If Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, the Examiner is respectfully requested to call Applicants' representative at (541) 715-1694 to discuss the steps necessary for placing the application in condition for allowance.

Favorable action by the Examiner is solicited.

Hewlett-Packard Company
1000 NE Circle Blvd. m/s 422B
Corvallis, OR 97330
(541) 715-1694

Respectfully submitted,
James Stasiak et al.

By: 
Donald J. Coulman
Reg. No. 50,406
Attorney for Applicants

Date: 26-June-06